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ABSTRACT

During the 1963-64 school year, a secondary teacher from the rurally isolated area of Silverton, Colorado initiated an individualized program in problem solving for a senior social studies class (N=8-10). Utilizing community resources, the instructor planned several units on government, while the students selected resource materials from the library. Each unit involved a period of: investigation (individualized data gathering projects); group discussion and activities (hypotheses exploration); and individualized hypothesis evaluation. Evaluation criteria established by student-teacher consensus were used to evaluate each student in terms of: conflicting data; logical solutions; satisfaction of student curiosity; student stimulation; use of student ability; and student attitude. Objective unit tests were designed to elicit the solution to a problem so that students would take a position making all answers relate to that position. Examining grading criteria, evaluative and open student questionnaires, and personal observations, the teacher evaluated the project in terms of student, teacher, school, and community improvement. Results indicated students: engaged in critical thinking; were interested and worked effectively in problem solving; better understood the areas covered; developed skills in decision making and research. Problems encountered were difficulties with: slow students and problem solving; covering desired material; keeping all students working; and finding sufficient resources. (JC)

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COLORADO WESTERN STATES SMALL SCHOOLS PROJECT

DOCUMENTATION

A PLAN FOR INDIVIDUALIZING INSTRUCTION FOR THE SENIOR GOVERNMENT CLASS THROUGH USE OF PROBLEM SOLVING UNITS

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THE WESTERN STATES SMALL SCHOOLS PROJECT

The Western States Small Schools Project, partly financed by a grant from the Ford Foundation, is designed to help the state education agencies in Colorado, Arizona, Nevada, New Mexico, and Utah in their efforts to improve instruction in the necessarily existent small schools. The Project began January, 1961 and will end August, 1965. Policy Board of the Project is composed of the chief state school officers of the cooperating states. Ralph G. Bohrson, Coordinator of the WSSSP, is headquartered in Denver, at the Colorado State Department of Education.

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A PLAN FOR INDIVIDUALIZING INSTRUCTION FOR THE SENIOR GOVERNMENT CLASS THROUGH THE USE OF THE PROBLEM SOLVING UNIT

I. PERTINENT INFORMATION

This project was carried out at Silverton High School. Silverton is an isolated town high in the San Juan Mountains of Colorado. This class met in the school library which measured thirty-six feet by forty-two feet and with the class enrollment of participating students of eight to ten involved in the project. The library was selected for this project, because most of the work could be in research, and also for access to large tables located in this room. These large working areas are more ideal for group discussions and other group activities.

The writer had felt from the beginning, that this project should continue for several years. This scheme should be divided into one year phases with the emphasis each year on reviewing, evaluating as to the strengths and weaknesses, and improving on the preceding year's work.

II. REASONS FOR PROJECT

The writer has no formal data as to student needs that stimulated the pursuit of this method of instruction. However, there is a knowledge of student needs as a result of teaching experience in the field. The traditional method of teaching and grading are inadequate in a heterogeneous class as far as ability is concerned. A teacher should make all effort to reach each individual on their particular level or ability. The writer feels that this method of teaching will meet individual needs more effectively than the traditional method.

The curriculum had little to do with deciding upon the use of this activity. The writer feels that the "method" of teaching itself is the primary objective in this experimental project.

The students' attitudes and behaviors reflected and demonstrated a real need for some form of change in the teaching procedure. These reasons just stated stimulated the writer to look for a better method of teaching social studies as a live and vital subject. Most students sit in their social studies class and never see the reason for its existence, nor do they learn more than some unrelated facts. The writer feels that the method experimented upon not only challenges the student, but it gives direction and meaning to the course of study. It encourages critical thinking on the part of each pupil concerning the various phases of study as well as furnishes a variety of working levels that will keep the individual working in his or her ability range.

A teacher in a small school must teach several different subjects and in each class he faces a heterogeneous group as far as ability is concerned. The problem is to find some method of teaching that will overcome the obstacles presented by such a group as well as give the students the opportunity to work at their own speed and level. In addition to this, the writer feels that a device for encouraging critical thinking should replace teacher and textbook indoctrination. The slow and bright student can be challenged more effectively in a small school situation through the use of the method under discussion in this paper. Another advantage to this type of procedure would be a more economical and effective utilization of the teacher's time in the classroom.

III. RELATED RESEARCH

The interest generated in this activity did not come from the findings of those in the field of research, but rather from the needs that have been explained in the preceding paragraphs. Another source of stimulation was a course directed by Dr. Lynn Weldon at Adams State College in Alamosa, Colorado, on the problem solving method. The interest and effort of the writer in this

project has in no way been required or prompted, but, has been solely for the personal satisfaction of improving the teaching method for a more effective means of making social studies something "real" for each individual being taught.

IV. PROCEDURE

1. Need. The writer's awareness of the inadequate method currently being practiced by most social studies teachers became more acute with his deepening years of experience. It became more apparent that for years the problem that had been diagnosed as student inadequacy was simply, in truth, an insufficient manner of presentation. The writer realized that he could not challenge students on such diverse intellectual levels with a method that recognized and directed its efforts toward only one plane of ability. The plane of classroom instruction is usually decided by the teacher, and in most instances, students both slow and bright are neglected and left to waste in such a situation. Once this was realized by the writer, the need was clear and the problem plainly evident.

2. Gathering preliminary data. The writer made use of several books concerned with the problem solving approach. A conference was held with Dr. Lynn Weldon, Adams State College, on the development of this approach. Discussions with others who had used this type of procedure supplied many valuable ideas on the application of this method to the individualization of instruction in the classroom. The writer then developed the units to be studied.

3. Selection and use of materials. During this phase of procedure, the writer had to throw open the complete files of the library to students. The major emphasis was placed upon the selection of books, magazines, and newspapers that had articles by noted authorities, who presented the facts about the subject under question. The majority of the material was actually selected

by the pupils themselves. However, the teacher did review and select movies, arrange firsthand experiences through guest speakers, and took advantage of community resources when they satisfied the criteria for this course. All materials had to show a relationship to the problem as well as to fulfill the other criteria of research. The teacher was able to review all materials to insure their value and effectiveness in meeting these requirements.

4. Planning and conducting class activities. The teacher introduced the units in several ways. These methods included presentation of a film or filmstrip, use of a guest speaker with some relationship to the problem, and by class discussion.

After each unit had been initiated, they were divided into three phases. These were as follows: (1) a period of investigation for each individual student in which he or she made their own discoveries; (2) a time of group consultation or discussion and various class activities; and (3) the determination of a solution and an evaluation of these hypotheses.

The period of student investigation of the problem dealt with the data and opinions given either by authority or fact. This was accomplished through the reading of books, magazines, and reports. Special emphasis was given to the understanding of the 'What' and 'Where' of finding authoritative sources. In pursuing this problem, the following things were done: individual investigation, group studies, individual projects, and class discussions. Each person was encouraged to work on his own level and speed. If success was to be felt by every individual, as well as the instructor, this phase had to be conducted on different levels to insure a feeling of accomplishment by everyone. The wide range of individual differences made it necessary for this project to provide a successful study on every possible level.

Audio-visual aids were used to aid the students in their formation of a hypothesis. The following aids were used for this purpose: pictures;

movies; filmstrips; and some tape recordings, made by people related in the field of study, as a stimulant for discussions in the classroom. These aids were also important in developing student understanding of the subject. Each student was given an individual project to work on that could assist the class in their comprehension and deeper realization of the full meaning of the topic under investigation. Some of these projects are included in the following enumeration: bulletin board, collecting newspaper articles, collecting cartoons, drawing maps, drawing diagrams, writing brief biographies of famous men, and keeping up-to-date bibliographies. The pupils were allowed to select the individual project that they wanted or were interested in the most.

The second period of time was used for the group to discuss the data found in the previous investigation and for the formation of some basic conclusions in their search for the final accepted solution. This was carried out through the use of round table discussions, panel discussions and debates. Trips were made at this time to areas that would benefit the students. For example, a trip to the county court house was made for the purpose of holding a mock trial during the study of the Judicial System. Also, group activities other than those already mentioned were carried out in the second phase of the unit organization and execution. A mock meeting of Congress was held and the actual passing of several bills was demonstrated in one such activity.

In the third period of time, the students were given class time to present, prove, and defend his or her hypothesis to the class. A general discussion was held and criticism was given by the group on each idea presented. These ideas were presented formally by individuals and the group as well. The class made decisions as to possible final solutions through this period of discussion and determined, to their best ability, the best possible solution which was accepted by the class as a whole.

5. Trying new methods and techniques. An evaluation of the methods and techniques used in each unit was made by the teacher after each unit was completed.

New and old ideas were used and combined together to find the best method for accomplishing the criteria of the unit. During the first part of any given single topic, a very simple procedure was followed which involved the use of the steps in the problem solving method. The teacher's position in the early stages of study was as a counselor or advisor to each pupil as assistance was indicated and needed. In the latter part of the unit, teacher-student conferences were held in which the individual discussed his current problems with respect to his particular phase of the unit. Individual guidance was continued by the teacher at this point. Any correlation to present day problems was brought out to strengthen a better understanding of our government.

In the last three units a great deal of time was given to activities that involved the students in areas related to the major problem. Such activities as individual projects, mock trials, study groups as well as debates were used to experiment in new areas. The students were asked, in the earlier phase of this project, to present a formal paper giving a statement of their hypothesis or hypotheses and the data that supported this conclusion or conclusions. In the latter units, the students were asked to write their data on note cards as they made their investigation and to organize these cards for examination by the teacher at the completion of the study. The instructor felt that this technique brought about better organization and caused more critical thinking on the part of the class as a whole.

6. Evaluating results. The criteria for evaluation of each unit was established with a number of things under consideration. The most prominent of these was the acceptance of the rule, or standard, for making judgment. This was determined through democratic procedures by the class. The establishment of a criteria to sound out the hypothetical problem solution must be met and agreed upon by both the students and the teacher. Once this agreement has been set, there should be no conflict with it. Standards should also be set and observed by the community. Since these standards have been

by the community, and accepted by the local school board, it is the responsibility of the teacher to see that they are upheld in the classroom.

The criteria for units involved the use of authority or authorities to substantiate the hypothetical problem solutions. The use of logic was necessary. A better understanding of the problem had to be gained by a study of the data and facts involved. The following six points were used for evaluating the students: (1) Does this conflict with known facts? (2) Is this a logical solution? (3) Does this answer completely satisfy the student's curiosity concerning the problem? (4) Has this solution stimulated the student to think? (5) Has the student gathered information to the best of his ability? and (6) Does the student have a satisfactory attitude in the class?

The writer, in the evaluation of this project, considered four specific areas to aid in the compilation of his data. Those were: (1) criteria for grading, (2) and evaluative questionnaire, (3) personal observation, and (4) an open questionnaire. Personal observation and criteria for grading gave the writer his own opinion while the questionnaires were designed to reflect and to reveal the opinions for the students as to the strengths and the weaknesses of the project.

Before the proper evaluation of this project can be determined, pertinent problem factors and side issues involved should be considered. The most outstanding of these was the isolation factor of the experimental group. The town of Silverton is high in the San Juan Mountains which lends an atmosphere of separation from the rest of the world. Many of the students had not traveled more than fifty to a hundred miles away from this community in their entire life. As a direct result of this factor, the limited experiences of the pupils and the limited community resources in this situation had a great deal of bearing upon the value and effectiveness of this experiment. The third factor was finding sufficient material for the study, which was especially difficult in a small high school. Another thing to be considered was the

involvement of the students' needs, interests, and concerns when they are on such diverse intellectual and reading levels. The use of ability grouping would have made this project much easier, but in a small school the teacher must deal with this type of classroom.

In the evaluation of the writer, he found several strengths and some weaknesses in this program. In his estimation, the strong points far outweighted the weaknesses. These strong points are as follows: (1) the students did some critical thinking on the problems given; (2) a great interest and desire to participate in the problem was noted by the writer as well as the effective way in which they worked; (3) the students had a much better understanding of the areas studied and a greater interest in these areas; (4) each student was able to work at his own speed and level which facilitated greater accomplishments or results; (5) good procedures in the making of decisions, conducting research and using scientific method of reaching conclusions were developed; and (6) the last and most important strength was the ability to challenge both the slow and the bright student in the same class and on the same unit of study.

There were four weaknesses as seen by the author of this project. They were: (1) the difficulty of the slow student to understand and to do the problem solving method, (2) the class did not cover as much of the subject as the teacher would have liked, but the study did go deeper in the areas studied; (3) the teacher did find it much harder to keep all students working when using the individual approach to class time; and (4) the teacher found it difficult to have sufficient materials for the students to study. One method of overcoming some of the weaknesses just mentioned would be to cut down on the units or rather have less involved units of study. Perhaps, the units used in this project were too broad and needed simplification. This would keep more interest and allow for time more consistent with the materials available.

VI. THE IMPROVEMENT RESULTING FROM THIS ACTIVITY

Basically, the improvements expected in the writer's earlier proposal were upheld. However, there were some areas in which the actual results fell short of the teacher's expectations and desires. These will be discussed in the following paragraphs with respect to these groups: the students, the teachers, the school, and the community.

1. Improvements for students. The students showed a more satisfying understanding of the subject as a result of the objective test. All of the students in the class did well on the test with the exception of two slow students. These tests (for each unit) were arranged in such a manner that a student would take a position in the solution of the problem, making all answers to the tests directly related to the position taken. These tests did show that the students had not only learned facts, but had done some critical thinking of their own on the subject. After each test was given and graded, the class was allowed to discuss any question within that test. The pupils could discuss any question they had missed and if they had good sound reasoning for their answer to a particular question, it would be marked correct. This was done as a measuring device for the teacher to determine the amount of critical thinking done on the part of the students.

It did reveal that the slow students had not done much analyzing of facts. However, the teacher felt with more experience in the preparation of such a test, as well as in teaching this particular method, this problem could be overcome.

Actual anecdotal records were not kept by the writer, but many incidents that occurred during this experiment are remembered. It was learned, in talking with the two brightest students, that both had grasped an understanding of the method of study as well as gained in insight into the subject being investigated. From conversations, the writer felt that the pupils appreciated

the opportunity to work at their own rate. Since the most advanced student in the class was killed, it is hard to make a final evaluation as to the effectiveness of this study on bright students. Only one other student could be placed within this group. Therefore, the conclusions of the teacher are based upon his results. Both his progress and interest in the subjects indicated that this was a good method for this type of student.

Four individuals composed the "above average group" in this project. Their scores on intelligence and achievement tests showed little variation. The comparison of the previous year with the results of this year's experimental project indicates the success of the problem solving plan of teaching. All of these students showed more interest and did more work than the former year had disclosed. One individual who could draw did an outstanding job in making cartoons that not only displayed his ability, but his clear insight into the subject with its up-to-date implications. On other occasions, other members of this group did outstanding work in other phases of endeavor.

The third group was classed as "below average." They were interested in the subjects under investigation, but seemed to find the problem solving method very difficult. However, they revealed a great deal of progress toward understanding this method at various stages in this project. Much of the teacher's time was spent in helping these four pupils solve their individual problems. The author feels that possibly the problem solving method should not be used with either this group or the slow group. However, it should be said, that this method was new to both the teacher and the students as well. Perhaps more experience with this type of plan would eliminate this factor, and cause better results in the individuals' response.

The slow students could not effectively tackle a problem with this method. However, they did display an interest throughout the whole year, whereas in the previous year the teacher found it difficult and almost impossible to maintain their interest with the traditional method of teaching. It is

felt, that if a student's interest is aroused and sustained, disregarding his or her ability, then something has certainly been gained from the experience. The questionnaire disclosed the genuine pleasure or satisfaction of these two students with the course as well as the method being used.

Definite changes were noted in the students of this class as a result of this new method of classroom procedure. Without exception, they displayed more interest, a greater desire for learning, a greater willingness to accept responsibility, and a remarkable change in their attitude toward the course of government. Only two in the class did not accept responsibility, but the writer feels that this was due to the natural make-up of the individuals. It should be noted that a regular amount of work was accomplished and produced in this type of classroom than in any other course the teacher had ever taught. The class worked individually and most of their learning was done by gaining self-understanding. Six members did very well, while the rest of the class had to have a great deal of help from the teacher.

2. Improvements for teachers. The effect on the teaching practices as a result of this experiment was very evident. This teacher used the problem solving unit or method in his other classes. This materialized into assignments from which individualized study was accomplished successfully on the high school level. In these assignments the students would investigate some topic such as the administration of a president, and then write and discuss orally the strengths and weaknesses of his administration. It has also influenced the use of a more individualized type of classroom work, where a greater emphasis was placed upon critical thinking. These new methods were used in World History as well as American History.

The attitude of this teacher as a result of this project has not changed to a great extent. Perhaps, this was due to the writer's felt need for this type of teaching on the high school level for some time. There was and is a great need for some method of challenging the pupil on an individual level.

The important thing to this teacher, is the realization of how well this method has done with the experimental group. It has been felt, that it would be impossible to challenge a group of students on such diverse intellectual and achievement levels. A a result of this experiment, the writer feels confident that it can be accomplished.

There was a great deal of interest in the activities sponsored by this project by both faculty members and parents. Many discussions were held in which the other teachers showed an interest in the advantages of this type of method. However, no actual change in teaching methods were noted that directly resulted from the influence of this project.

3. Improvements for school and community. There were no changes in school operations as a result of this project, except in association with the project itself. However, there was very strong interest in the community about the project. Much of this was stimulated for two reasons. One, the community was involved in the project through discussions with the writer and as resource visitors for the project. Second, whenever possible, people were invited to participate from the community. For example, when studying political parties, people from the Democratic Party and the Republican Party were asked to explain and discuss the party principles as well as other characteristics distinguishing them apart from each other. A student who had been studying in Germany as an exchange student in the field of political science discussed the political parties in that country as compared to ours.

V. RECOMMENDATIONS

The writer feels that more work in this area should be done before an adequate evaluation of the value of this method can be reached. It is felt that several years of using this method will refine and improve the procedure. The writer feels that by building up some files with appropriate props, on the different topics to be used in this type of study will make presentations more effective.

If other teachers are interested in using this method in their classes, it is important that several things be taken into consideration. First, an evaluation of the students' abilities and achievements should be keenly observed. Second, it would be expedient to make decisions as to the amount of material to be covered in regard to the resources that are available to the class. This is indeed important in the smaller high schools where library facilities are not equipped for such extensive study. Lending libraries can and should be called upon to insure receiving enough material for the study when it is needed. Third, the units should be developed that would be consistent with the needs that arise from the first two points just discussed. Fourth, it would be most important to make an annotated bibliography of the references used in each investigation, as well as other resources to be consulted, before starting this type of class. Fifth, a criteria for grading should be developed based upon the ability, achievement, desire, interest, and initiative of each student. The writer feels that should be done on a personal basis to insure the best possible development of the student as a whole. Sixth, in each unit study, time should be set aside for individualized study, group discussions, and individual as well as group decisions. These sessions will guide the students in their search for a solution and will help them do some critical thinking upon the subject being investigated. Seventh, the topics should take into consideration the needs, interests, and desires of the students as well as the locality of the school. This is especially true if the teacher is to gain the full attention of the students effort and work. If these recommendations are followed, the writer has no doubt that a class can successfully be challenged to perform to their maximum ability. The need for such a procedure that gives meaning to a course of study is long overdue.